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CAMBRIDGE ANTIBODY TECHNOLOGY LT.

Telephone 0223 837526
Fax 0223 837524

THE DALY RESEARCH LABS
BABRAHAM HALL
CAMBRIDGE
CB2 4AT

TO Martin Wood
cc Diana Dunstan

FROM Dave Chiswell

SUBJECT Phage Antibody project

DATE 30th July 1990

Number of Pages (including this) . 5

Dear Martin,

I have attached the document we discussed today. I am reasonably free meeting in the next two week except for the afternoon of Monday 6t

I look forward to hearing from you.

Regards,

COLLABORATIVE AGREEMENT

BETWEEN

CAMBRIDGE ANTIBODY TECHNOLOGY

AND

THE MEDICAL RESEARCH COUNCIL

PHAGE-ANTIBODY PROJECT

Preliminary Discussion Document

Dr D. J. Chiswell

27th July 1990

Proposals discussed with Chiswell on 7 August '90 — Chiswell to prepare Note.

Essentially C.A.T. want joint ownership, 50-50 sharing of revenue, prepared but [illegible] to have sole right to license. No action required [illegible] [illegible].

[illegible]
8/8/90.

1. Introduction

The aim of this document is to provide a basis for discussion leading to an agreement over collaboration between the LMB and CAT with respect to the phage antibody project. I would hope that the agreement reached would act as a framework within which all CAT's interactions and collaborations with the LMB can viewed.

2. The phage antibody project.

This project represents a major scientific and commercial advance directed at the key problem of screening for "antibody" specificities in bacterial systems.

2.1 History

Many people in the field, including independently Greg and myself, realised that expressing antibodies on the surface of bacteria or phage would be attractive. The problem has been how to make it work. John McCafferty and myself devised a potential solution and made the key oligonucleotides during the Autumn of 1989. John McCafferty has been employed and paid by CAT since January 1990. Because CAT had no lab facilities of its own, after discussion with Greg it was decided that until CAT's facilities were ready John could work in Greg's lab on projects that had joint interest. The actual projects included some already underway in the lab and the start of the phage antibody project. John signed form Y and worked in the LMB between January and May of 1990. The materials he bought with him allowed him to build the phage that was the key to the eventual success of the project. The first positive result came with a VH domain from the lysozyme antibody D1.3. John then built a single chain Fv version using a clone provided by Andrew Griffiths which ultimately has allowed John to prove the concept works well and reproducibly.

2.2 Intellectual property

Greg and I have discussed the history with Sir Aaron and have agreed that the invention was by John and myself, but that the MRC have a share of the intellectual property and authorship of the scientific papers. If we were to take an unduly legalistic view I believe the MRC could validly claim 25-50% of John's share of the intellectual property.

2.3 The present state and future potential of the phage antibody project

We are at the stage with the project that the patent has been filed, the concept of surface expression of a functional antibody fragment and the ability to select a desired antigen binding specificity from a mixed population is proven and a few simple experiments will lead to the first publication. The project then needs to be extended to the areas of repertoire construction and the isolation of novel binding molecules. This should ideally be performed both at CAT and the LMB. In particular active collaboration between CAT and Greg's lab will be essential to build an

impregnable scientific position. It is likely that Cesar Milstein's lab would be the next major collaborators. A DTI SMART grant has been awarded to CAT which will increase the numbers of our staff working on the project.

3. Topics for discussion

The topics I believe we should cover in our discussions are listed below.

3.1 Areas for collaboration

The area could be defined as receptors expressed on phage surfaces and includes the present technology and future improvements and developments.

3.2 Academic Exploitation.

The MRC scientists should be free to pursue and publish the research as they see fit. Where there is [illegible] scientific collaboration with CAT this would be [illegible] joint [illegible]

3.3 Commercial Exploitation

CAT should be free to exploit the technology commercially and have sole [illegible] rights. CAT should benefit from the work it performs and [illegible] CAT and the MRC should benefit from their share of the intellectual property.

3.4 Intellectual Property

The key questions to address will be:

-What intellectual property is there at the beginning of the project and who owns it?

-What additional intellectual property needs to be added to make it commercially and [illegible] viable and who can add it?

-What additional value is needed for its full commercial potential to be realised?

-How do we deal with the [illegible] of invention arising from the collaboration?

I suggest that in this case the [illegible]ctual property is split equally between CAT and the MRC over the whole area of collaboration. This simple approach then automatically deals with the last case above.

3.5 Revenues

How should the MRC and CAT benefit appropriately from the eventual revenue generated?

Three types of revenue can be envisioned:

Royalties

These normally accrue only on end-user product sales. Royalties are usually assumed to be payments for the intellectual property developed.

Initial Payment

An up front payment is generally paid for several reasons including, to ensure the purchaser has the commitment and incentive to develop products, as payment for the work already done and if associated with a longer term relationship to allow the one partner to increase the assets it can bring to bear on the problem.

Contract Income

Contract income is direct payment for work to be done usually with strict milestones. It may include developing specific products or manufacturing products/intermediates. These products themselves may attract royalties.

I favour agreeing a royalty level based on the intellectual property share and CAT would pay that proportion of appropriate revenues deriving from the technology to the MRC.

4. Other collaboration

If the agreement works well other areas of collaboration could be fitted into a broadly simliar framework. The next area to consider would be single domain antibodies. CAT has already started its programme to develop this technology to a stage where real commercial possibilities would be opened up.

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